CLAIMS

1. A laminated glass,

wherein at least an interlayer film for laminated glasses and a glass sheet are laminated and unified, Head Injury Criteria (HIC) values, measured according to regulations of European Enhanced Vehicle-safety Committee; EEVC/WG 17, being 1,000 or lower.

2. A laminated glass,

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wherein at least an interlayer film for laminated glasses and a glass sheet are laminated and unified, Head Injury Criteria (HIC) values, measured by dropping an impactor head from a height of 4 m above the surface of the laminated glass according to regulations of Economic Commission for Europe; ECE-Regulation No. 43 Annex 3, being 300 or lower.

- 3. The laminated glass according to Claim 1 or 2, wherein the interlayer film for laminated glasses contains a plasticizer for interlayer films in an amount 30 parts by weight or more per 100 parts by weight of polyvinyl acetal resin.
- 4. The laminated glass according to Claim 1, 2 or 3, wherein the interlayer film for laminated glasses has a storage elasticity modulus G' in a linear dynamic viscoelasticity test, measured with frequencies being varied at 20°C in a range of frequencies of 5.0×10^1 to 1.0×10^2 Hz, of 3×10^7 Pa or lower.
 - 5. The laminated glass according to Claim 1, 2, 3 or 4,

wherein the interlayer film for laminated glasses has 35 $\,$ tan δ of at least one point of 0.6 or more at 20°C in a

range of frequencies of 5.0×10^1 to 1.0×10^2 Hz.

- 6. The laminated glass according to Claim 1, 2, 3, 4 or 5,
- wherein the interlayer film for laminated glasses has maximum stress σ of 20 MPa or lower and fracture point deformation ϵ of 200% or more, derived from a stress-deformation curve at 20°C and a tensile speed of 500%/min.
- 7. The laminated glass according to Claim 6, wherein the interlayer film for laminated glasses has breaking energy of 1.0 J/mm² or larger.
- 8. The laminated glass according to Claim 4, 5, 6 or 15 7,

wherein the interlayer film for laminated glasses comprises a crosslinked polyvinyl acetal resin having an acetalization degree of 60 to 85 mol% and contains a plasticizer for interlayer films in an amount 40 parts by weight or more per 100 parts by weight of the abovementioned polyvinyl acetal resin.

 The laminated glass according to Claim 8, wherein the interlayer film for laminated glasses has
 a thickness of 800 μm or more.

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10. The laminated glass according to Claim 4, 5, 6, 7, 8 or 9,

wherein the interlayer film for laminated glasses

30 comprises a polyvinyl acetal resin having a half band width
of a peak of a hydroxyl group of 250 cm⁻¹ or lower in
measuring infrared absorption spectra.

11. The laminated glass according to Claim 4, 5, 6, 35 7, 8, 9 or 10,

wherein rubber particles are dispersed in the interlayer film for laminated glasses.

- 12. The laminated glass according to Claim 1, 2, 3, 5, 4, 5, 6, 7, 8, 9, 10 or 11,
 - wherein the interlayer film for laminated glasses has a multilayer structure.
- 13. The laminated glass according to Claim 12,
 wherein the interlayer film for laminated glasses has
 a two-layers structure and a storage elasticity modulus G'
 at 20°C and a frequency of 5.0 × 10¹ to 1.0 × 10² Hz in one
 layer is at or below a half of a storage elasticity modulus
 G' at 20°C and a frequency of 5.0 × 10¹ to 1.0 × 10² Hz in
 the other layer.
- 14. The laminated glass according to Claim 13, wherein the storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in one layer is 2 20 \times 10⁶ Pa or lower and the storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in the other layer is 1×10^7 Pa or higher.
- 15. The laminated glass according to Claim 14, wherein the layer having a storage elasticity modulus G' of 2 \times 10⁶ Pa or lower at 20°C and a frequency of 5.0 \times 10¹ to 1.0 \times 10² Hz has tan δ of 0.7 or more at 20°C and a frequency of 5.0 \times 10¹ to 1.0 \times 10² Hz.
- 30 16. The laminated glass according to Claim 12, wherein the interlayer film for laminated glasses has a three-layers structure and a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in an intermediate layer is at or below a half of a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1

to 1.0×10^2 Hz in one or any of two layers composing the outermost layer.

The laminated glass according to Claim 16, wherein a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^{1} to 1.0×10^{2} Hz in the intermediate layer is 2×10^6 Pa or lower and a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in one or any of two layers composing the outermost layer is 1×10^7 Pa or higher. 10

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The laminated glass according to Claim 17, wherein the intermediate layer has tan δ of 0.7 or more at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz.

19. The laminated glass according to Claim 16, 17 or 18,

wherein a thickness of the intermediate layer is 10%. or higher of a total thickness of the interlayer film for laminated glasses. 20

- 20. The laminated glass according to Claim 12, wherein the interlayer film for laminated glasses has a three-layers structure and a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in one or any of two layers composing the outermost layer is at or below a half of a storage elasticity modulus G' at 20°C and a frequency of 5.0 \times 10 1 to 1.0 \times 10 2 Hz in an intermediate layer.
- 21. The laminated glass according to Claim 20, wherein a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in one or any of two layers composing the outermost layer is 2×10^6 Pa or lower and a storage elasticity modulus G' at 20°C and a frequency 35

of 5.0 \times 10¹ to 1.0 \times 10² Hz in the intermediate layer is 1 \times 10⁷ Pa or higher.

- 22. The laminated glass according to Claim 21, wherein tan δ at 20°C and a frequency of 5.0 \times 10¹ to 1.0 \times 10² Hz in one or any of two layers composing the outermost layer is 0.7 or more.
- 23. The laminated glass according to Claim 20, 21 or 10 22, wherein a total thickness of the outermost layer is

wherein a total thickness of the outermost layer is 10% or higher of a total thickness of the interlayer film for laminated glasses.

- 24. The laminated glass according to Claim 12, wherein the interlayer film for laminated glasses has a multilayer structure of four-layers or more and a storage elasticity modulus G' at 20°C and a frequency of 5.0 × 10¹ to 1.0 × 10² Hz in at least one layer of an intermediate
 20 layer is at or below a half of a storage elasticity modulus G' at 20°C and a frequency of 5.0 × 10¹ to 1.0 × 10² Hz in one or any of two layers composing the outermost layer.
- 25. The laminated glass according to Claim 24,
 wherein a storage elasticity modulus G' at 20°C and a
 frequency of 5.0 × 10¹ to 1.0 × 10² Hz in at least one
 layer of the intermediate layer is 2 × 10⁶ Pa or lower and
 a storage elasticity modulus G' at 20°C and a frequency of
 5.0 × 10¹ to 1.0 × 10² Hz in one or any of two layers
 composing the outermost layer is 1 × 10⁷ Pa or higher.
 - 26. The laminated glass according to Claim 25, wherein the intermediate layer having a storage elasticity modulus G' of 5.0×10^1 to 1.0×10^2 Hz being 2 \times 10⁶ Pa or lower at 20°C and a frequency has tan δ of 0.7

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or more at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz.

- 27. The laminated glass according to Claim 25 or 26, wherein a total thickness of the intermediate layer having a storage elasticity modulus G' of 2×10^6 Pa or lower at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz is 10% or higher of a total thickness of the interlayer film for laminated glasses.
- 10 28. The laminated glass according to Claim 17, 18, 19, 25, 26 or 27,

wherein the intermediate layer having a storage elasticity modulus G' of 2×10^6 Pa or lower at $20^{\circ}C$ and a frequency of 5.0×10^1 to 1.0×10^2 Hz is biased to the side of either surface layer with respect to the thickness direction of the interlayer film for laminated glasses.

- 29. The laminated glass according to Claim 12, wherein the interlayer film for laminated glasses has a multilayer structure of four-layers or more and a storage elasticity modulus G' at 20°C and a frequency of 5.0 × 10¹ to 1.0 × 10² Hz in one or any of two layers composing the outermost layer is at or below a half of a storage elasticity modulus G' at 20°C and a frequency of 5.0 × 10¹ to 1.0 × 10² Hz in at least one layer of an intermediate layer.
- 30. The laminated glass according to Claim 29, wherein a storage elasticity modulus G' at 20°C and a 30 frequency of 5.0×10^1 to 1.0×10^2 Hz in one or any of two layers composing the outermost layer is 2×10^6 Pa or lower and a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in at least one layer of the intermediate layer is 1×10^7 Pa or higher.

31. The laminated glass according to Claim 30, wherein tan δ at 20°C and a frequency of 5.0 × 10¹ to 1.0 × 10² Hz in one or any of two layers composing the outermost layer is 0.7 or more.

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32. The laminated glass according to Claim 29, 30 or 31,

wherein a total thickness of the outermost layer is 10% or higher of a total thickness of the interlayer film for laminated glasses.

33. The laminated glass according to Claim 21, 22, 23, 30, 31 or 32,

wherein the intermediate layer having the storage elasticity modulus G' of 1×10^7 Pa or higher at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz is biased to the side of either surface layer with respect to the thickness direction of the interlayer film for laminated glasses.

20 34. The laminated glass according to Claim 12, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32 or 33,

wherein the interlayer film for laminated glasses has a multilayer structure of three-layers or more and each layer has wedged form and the layer having wedged form is alternately overlaid with the layer of wedged form having a small storage elasticity modulus G' taken as an intermediate layer so that an overall thickness becomes uniform.

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35. The laminated glass according to Claim 1 or 2, wherein the interlayer film for laminated glasses generates a break of 10 mm or longer in length in measuring a Head Injury Criteria (HIC) value.

36. The laminated glass according to Claim 1, 2 or 3, wherein the interlayer film for laminated glasses has a sandwiched structure between glass sheets and a thickness of at least one glass sheet is 1.8 mm or smaller.

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37. The laminated glass according to Claim 1, 2 or 3, wherein the interlayer film for laminated glasses is sandwiched between a glass sheet and a transparent resin plate.

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38. The laminated glass according to Claim 37, wherein the transparent resin plate comprises polycarbonate, acrylic resin, acrylic copolymerizable resin or polyester resin.

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- 39. The laminated glass according to Claim 37 or 38, wherein the transparent resin plate is coated with transparent elastomer.
- 40. The laminated glass according to Claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38 or 39,

wherein electromagnetic wave shielding performance in frequencies of 0.1 to 26.5 GHz is 10 dB or less, haze is 1% or lower, visible transmittance is 70% or higher, and solar radiation transmittance in a wavelength region of 300 to 2,100 nm is 85% or lower of visible transmittance.

41. An interlayer film for laminated glasses, which contains a plasticizer for interlayer films in an amount 30 parts by weight or more per 100 parts by weight of polyvinyl acetal resin,

a storage elasticity modulus G' in a linear dynamic viscoelasticity test, measured with frequencies being

varied at 20°C in a range of frequencies of 5.0×10^1 to 1.0×10^2 Hz, is 3×10^7 Pa or lower.

42. The interlayer film for laminated glasses 5 according to Claim 41,

wherein tan δ of at least one point is 0.6 or more at 20°C in a range of frequencies of 5.0 \times 10^1 to 1.0 \times 10^2 Hz.

43. The interlayer film for laminated glasses 10 according to Claim 41 or 42,

wherein maximum stress σ is 20 MPa or smaller and fracture point deformation ϵ is 200% or more, derived from a stress-deformation curve at 20°C and a tensile speed of 500%/min.

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44. The interlayer film for laminated glasses according to Claim 43,

wherein breaking energy is 1.0 J/mm² or larger.

20 45. The interlayer film for laminated glasses according to Claim 41, 42, 43 or 44,

which comprises a crosslinked polyvinyl acetal resin having an acetalization degree of 60 to 85 mol% and contains a plasticizer for interlayer films in an amount 40 parts by weight or more per 100 parts by weight of the above-mentioned polyvinyl acetal resin.

- 46. The interlayer film for laminated glasses according to Claim 45,
- which has a thickness of 800 μ m or more.
 - 47. The interlayer film for laminated glasses according to Claim 41, 42, 43, 44, 45 or 46,

which comprises a polyvinyl acetal resin, a half band 35 width of a peak of a hydroxyl group in measuring infrared absorption spectra being 250 cm⁻¹ or less.

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- 48. The interlayer film for laminated glasses according to Claim 41, 42, 43, 44, 45, 46 or 47, wherein rubber particles are dispersed.
- 49. The interlayer film for laminated glasses according to Claim 41, 42, 43, 44, 45, 46, 47, or 48, which has a multilayer structure.

50. The interlayer film for laminated glasses according to Claim 49,

which has a two-layers structure, a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in one layer being at or below a half of a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in the other layer.

51. The interlayer film for laminated glasses 20 according to Claim 50,

wherein a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in one layer is 2 × 10^6 Pa or lower and a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in the other layer is 1×10^7 Pa or higher.

52. The interlayer film for laminated glasses according to Claim 51,

wherein the layer having a storage elasticity modulus 30 G' of 5.0×10^1 to 1.0×10^2 Hz of 2×10^6 Pa or lower at 20°C and a frequency has tan δ of 0.7 or more at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz.

53. The interlayer film for laminated glasses according to Claim 49,

which has a three-layers structure, a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in an intermediate layer being at or below a half of a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in one or any of two layers composing the outermost layer.

- 54. The interlayer film for laminated glasses according to Claim 53,
- wherein a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in the intermediate layer is 2×10^6 Pa or lower and a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in one or any of two layers composing the outermost layer is 1×10^7 Pa or higher.
 - 55. The interlayer film for laminated glasses according to Claim 54,

wherein the intermediate layer has tan δ of 0.7 or 20 more at 20°C and a frequency of 5.0 \times 10^1 to 1.0 \times 10^2 Hz.

56. The interlayer film for laminated glasses according to Claim 53, 54 or 55,

wherein a thickness of the intermediate layer is 10% or higher of a total thickness of the interlayer film for laminated glasses.

57. The interlayer film for laminated glasses according to Claim 49,

which has a three-layers structure, a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in one or any of two layers composing the outermost layer being at or below a half of a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in an intermediate layer.

58. The interlayer film for laminated glasses according to Claim 57,

wherein a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in one or any of two layers composing the outermost layer is 2×10^6 Pa or lower and a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in the intermediate layer is 1×10^7 Pa or higher.

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59. The interlayer film for laminated glasses according to Claim 58,

wherein tan δ at 20°C and a frequency of 5.0 x 10¹ to 1.0 x 10² Hz in one or any of two layers composing the outermost layer is 0.7 or more.

60. The interlayer film for laminated glasses according to Claim 57, 58 or 59,

wherein a total thickness of the outermost layer is 20 10% or higher of a total thickness of the interlayer film for laminated glasses.

- 61. The interlayer film for laminated glasses according to Claim 49,
- which has a multilayer structure of four-layers or more, a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in at least one layer of an intermediate layer being at or below a half of a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in one or any of two layers composing the outermost layer.
 - 62. The interlayer film for laminated glasses according to Claim 61,
- wherein a storage elasticity modulus G' at 20°C and a

frequency of 5.0×10^1 to 1.0×10^2 Hz in at least one layer of the intermediate layer is 2×10^6 Pa or lower and a storage elasticity modulus G' at 20° C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in one or any of two layers composing the outermost layer is 1×10^7 Pa or higher.

63. The interlayer film for laminated glasses according to Claim 62,

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wherein the intermediate layer having a storage elasticity modulus G' of 2 \times 10⁶ Pa or lower at 20°C and a frequency of 5.0 \times 10¹ to 1.0 \times 10² Hz has tan δ of 0.7 or more at 20°C and a frequency of 5.0 \times 10¹ to 1.0 \times 10² Hz.

64. The interlayer film for laminated glasses according to Claim 62 or 63,

wherein a total thickness of the intermediate layer having a storage elasticity modulus G' of 2×10^6 Pa or lower at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz is 10% or higher of a total thickness of the interlayer film for laminated glasses.

65. The interlayer film for laminated glasses according to Claim 54, 55, 56, 62, 63 or 64,

wherein the intermediate layer having the storage elasticity modulus G' of 2×10^6 Pa or lower at 20° C and a frequency of 5.0×10^1 to 1.0×10^2 Hz is biased to the side of either surface layer with respect to the thickness direction of the interlayer film for laminated glasses.

30 66. The interlayer film for laminated glasses according to Claim 49,

which has a multilayer structure of four-layers or more, a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in one or any of two layers composing the outermost layer being at or below a

half of a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in at least one layer of an intermediate layer.

5 67. The interlayer film for laminated glasses according to Claim 66,

wherein a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in one or any of two layers composing the outermost layer is 2×10^6 Pa or lower and a storage elasticity modulus G' at 20°C and a frequency of 5.0×10^1 to 1.0×10^2 Hz in at least one layer of the intermediate layer is 1×10^7 Pa or higher.

68. The interlayer film for laminated glasses according to Claim 67,

wherein tan δ at 20°C and a frequency of 5.0 \times 10^1 to 1.0×10^2 Hz in one or any of two layers composing the outermost layer is 0.7 or more.

20 69. The interlayer film for laminated glasses according to Claim 66, 67 or 68,

wherein a total thickness of the outermost layer is 10% or higher of a total thickness of the interlayer film for laminated glasses.

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70. The interlayer film for laminated glasses according to Claim 58, 59, 60, 67, 68 or 69,

wherein the intermediate layer having the storage elasticity modulus G' of 1 \times 10 7 Pa or higher at 20°C and a frequency of 5.0 \times 10 1 to 1.0 \times 10 2 Hz is biased to the side of either surface layer with respect to the thickness direction of the interlayer film for laminated glasses.

71. The interlayer film for laminated glasses according to Claim 49, 53, 54, 55, 56, 57, 58, 59, 60, 61,

62, 63, 64, 65, 66, 67, 68, 69 or 70,

which has a multilayer structure of three-layers or more, each layer having wedged form and the layer having wedged form being alternately overlaid with the layer of wedged having a small storage elasticity modulus G' taken as an intermediate layer so that an overall thickness becomes uniform.

72. An interlayer film for laminated glasses,
wherein a break of 10 mm or longer in length is
generated when an laminated glass is formed by sandwiching
the interlayer film for laminated glasses between two
glasses and a Head Injury Criteria (HIC) value of the
laminated glass is measured.

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73. The interlayer film for laminated glasses according to Claim 41, 42, 43, 44, 45, 46, 47 or 48, wherein polyvinyl acetal resin contains metal oxide particles having a function of screening out heat rays.

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74. The interlayer film for laminated glasses according to Claim 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71 or 72, wherein polyvinyl acetal resin of at least one layer contains metal oxide particles having a function of screening out heat rays.

75. The interlayer film for laminated glasses according to Claim 73 or 74,

wherein the particle of metal oxide is tin-doped indium oxide and/or antimony-doped tin oxide, and the above-mentioned tin-doped indium oxide and/or the above-mentioned antimony-doped tin oxide has an average diameter of secondary particles formed by flocculation of 80 nm or smaller and is dispersed in polyvinyl acetal resin in such

a way that a secondary particle formed by flocculation of 100 nm or larger in diameter has a density of 1 particle/ μm^2 or less in polyvinyl acetal resin.